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(54) TITLE: MOBILE TERMINAL AND SCHEDULE NOTIFICATION METHOD USING THE SAME

(57) ABSTRACT

PROBLEM TO BE SOLVED:

To Simplify Setting For Notification Of An Event And Achieve Rapid Recognition Of The Event.

SOLUTION:

When setting the timer 15 so as to output an alarm sound at a date and time appointed through the key input unit 14, the CPU 13 displays a plurality of illustrations, which differ depending on events and have been stored in advance in the illustration memory 17 so as to give the user instructions to select one illustration. When an illustration is selected and appointed, the CPU 13 stores the appointed illustration in the presentation memory 18 corresponding to an appointed date and time. Then, when the appointed date and time has been reached, the appointed illustration corresponding to the appointed date and time

is read from the presentation memory 18 and is displayed on the LCD 11.

WHAT IS CLAIMED IS:

1. A mobile terminal having a displayer and a timer function for measuring a current date and time, the mobile terminal comprising:

a first memory means for previously storing a plurality of pieces of mutually different image information depending on events;

an image information selection instruction means for instructing selection of predetermined image information from among the plurality of pieces of image information stored in the first memory means, and instructing setting of an appointed date and time to display the predetermined image information by means of the timer function;

a second memory means for storing the predetermined image information as schedule information corresponding to the appointed date and time when the predetermined image information is selected and appointed by the image information selection instruction means; and

a schedule display control means for comparing the appointed date and time stored in the second memory means with the current date and time measured by the timer

function, and reading the appointed image information corresponding to the appointed date and time from the second memory means and displaying the read image information on the displayer when the appointed and current dates and times are in accord as a result of the comparison.

2. A mobile terminal having a displayer, a timer function for measuring a current date and time, and an alarm function for outputting an alarm sound at an appointed date and time set by the timer function, the mobile terminal comprising:

a first memory means for previously storing a plurality of pieces of mutually different image information depending on events;

an image information selection instruction means for instructing selection of predetermined image information from among the plurality of pieces of image information stored in the first memory means when the timer function is set to output the alarm sound at an appointed date and time;

a second memory means for storing the predetermined image information as schedule information corresponding to the appointed date and time when the predetermined image information is selected and appointed by the image

information selection instruction means; and

a schedule display control means for comparing the appointed date and time stored in the second memory means with the current date and time measured by the timer function, and outputting the alarm sound and simultaneously reading the appointed image information corresponding to the appointed date and time from the second memory means and displaying the read image information on the displayer when the appointed and current dates and times are in accord as a result of the comparison.

3. The mobile terminal as claimed in claim 1 or 2, wherein, when a message set corresponding to the appointed date and time is stored in addition to the appointed image information in the second memory means, the schedule display control means selectively displays a combination of the appointed image information and the message, the appointed illustration alone, and the message alone.

4. A method for notifying a schedule in a mobile terminal having a displayer and a timer function for measuring a current date and time, the method comprising the steps of:

previously storing a plurality of pieces of mutually different image information depending on events;

instructing selection of predetermined image information from among the plurality of pieces of image information;

storing the predetermined image information as schedule information corresponding to the appointed date and time when the predetermined image information is selected and appointed; and

comparing the appointed and stored date and time with the current date and time measured by the timer function, and reading the appointed image information corresponding to the appointed date and time and displaying the read image information on the displayer when the appointed and current dates and times are in accord as a result of the comparison.

5. A method for notifying a schedule in a mobile terminal having a displayer, a timer function for measuring a current date and time, and an alarm function for outputting an alarm sound at an appointed date and time set by the timer function, the method comprising the steps of:

previously storing a plurality of pieces of mutually different image information depending on events;

instructing selection of predetermined image information from among the plurality of pieces of image information when the timer function is set to output the

alarm sound at an appointed date and time;

storing the predetermined image information as schedule information corresponding to the appointed date and time, when the predetermined image information is selected and appointed; and

comparing the appointed and stored date and time with the current date and time measured by the timer function, and outputting the alarm sound and simultaneously reading the appointed image information corresponding to the appointed date and time and displaying the read image information on the displayer when the appointed and current dates and times are in accord as a result of the comparison.

SPECIFICATION

DETAILED DESCRIPTION OF THE INVENTION

[0001]

FIELD OF THE INVENTION

The present invention relates to a mobile terminal, e.g., a portable telephone, and more particularly to a mobile terminal and a schedule notification method using the same, which enables the user to visually recognize a schedule at an appointed date and time by using a mobile terminal's function of outputting an alarm sound, and

simultaneously reading and displaying a registered message set corresponding to the appointed date and time.

[0002]

PRIOR ART IN THE FIELD

Recently, the use of digital mobile communication systems, represented by a cellular phone system and a personal handy-phone system (PHS), is rapidly increasing. A mobile terminal, for example, a portable telephone or the like, used in such a digital mobile communication system, is wirelessly connected to a base station forming a wireless area and establishes a communication path with a counterpart so as to perform voice communication with the counterpart. The mobile terminal has various functions in addition to the voice communication function. Among the various functions, there is a message alarm function, which informs the user of a preset date and time by outputting an alarm sound at the preset date and time, and simultaneously reads and displays a message which had been set and registered corresponding to the preset date and time.

[0003] However, according to the message alarm function, in order to recognize events at a predetermined date and time, the user must perform a troublesome letter registration task case by case, so that the burden on the user gets large due to such a manual task. Further, since the user must read a displayed text message letter by letter, it is

impossible to identify a corresponding event to be handled at once.

[0004]

TECHNICAL OBJECTS TO BE ACHIEVED BY THE INVENTION

As described above, when using a message alarm function, the conventional mobile terminal has a problem in that the user must perform a troublesome letter registration task for the user to recognize events, so that the burden on the user becomes large due to such a manual task, and it is impossible to identify an event at once because the user must read a displayed text letter by letter.

[0005] Accordingly, an object of the present invention is to provide a mobile terminal and a schedule notification method using the same, which does not require the user to perform a troublesome letter registration task and enables the user to rapidly identify an event.

[0006]

CONSTRUCTION AND FUNCTION OF THE INVENTION

The present invention provides a mobile terminal having a displayer and a timer function for measuring the current date and time.

[0007] In accordance with an aspect of the present invention, there is provided a mobile terminal including: a first memory means for previously storing a plurality of

pieces of mutually different image information depending on events; an image information selection instruction means for instructing selection of predetermined image information from among the plurality of pieces of image information stored in the first memory means, and instructing setting of an appointed date and time to display the predetermined image information by means of the timer function; a second memory means for storing the predetermined image information as schedule information corresponding to the appointed date and time when the predetermined image information is selected and appointed by the image information selection instruction means; and a schedule display control means for comparing the appointed date and time stored in the second memory means with the current date and time measured by the timer function, and reading the appointed image information corresponding to the appointed date and time from the second memory means and displaying the read image information on the displayer when the appointed and current dates and times are in accord as a result of the comparison.

[0008] According to such a construction, since a plurality of pieces of mutually different image information depending on events, which has been stored in a user's terminal according to setting of the user, are displayed on the displayer so as to give the user instructions to select

image information, the user can select and appoint predetermined image information from among the plurality of pieces of image information displayed on the displayer, and can select and appoint a date and time to display the predetermined image information as schedule information. In addition, when the predetermined image information is selected and appointed, the appointed image information is set to be stored corresponding to the appointed date and time. Thus, when the appointed date and time is measured by the timer function, the appointed image information corresponding to the appointed date and time is displayed.

[0009] Accordingly, in order to recognize an event, it will do if the user only selects predetermined image information from among a plurality of pieces of image information displayed on the displayer, so that it is unnecessary to perform a troublesome letter registration task, and it is thus possible to reduce the user's burden of performing such a tedious task. Also, when an appointed date and time has been reached, the terminal always enters a state in which the user can identify information displayed in the displayer, so that the user can rapidly identify an event by viewing image information displayed on the displayer.

[0010] The present invention provides a mobile terminal having a displayer, a timer function for measuring the current date and time, and an alarm function for outputting

an alarm sound at an appointed date and time set by the timer function.

[0011] In accordance with another aspect of the present invention, there is provided a mobile terminal including: a first memory means for previously storing a plurality of pieces of mutually different image information depending on events; an image information selection instruction means for instructing selection of predetermined image information from among the plurality of pieces of image information stored in the first memory means, when the timer function is set to output the alarm sound at an appointed date and time; a second memory means for storing the predetermined image information as schedule information corresponding to the appointed date and time when the predetermined image information is selected and appointed by the image information selection instruction means; and a schedule display control means for comparing the appointed date and time stored in the second memory means with the current date and time measured by the timer function, and outputting the alarm sound and simultaneously reading the appointed image information corresponding to the appointed date and time from the second memory means and displaying the read image information on the displayer when the appointed and current dates and times are in accord as a result of the comparison.

[0012] According to such a construction, when the timer function is set to output the alarm sound at an appointed date and time, a plurality of pieces of mutually different image information depending on events, which has been stored in a user's terminal, are displayed on the displayer so as to give the user instructions to select image information. Thus, the user can select and appoint predetermined image information from among the plurality of pieces of image information displayed on the displayer. In addition, when the predetermined image information is selected and appointed, the appointed image information is set to be stored corresponding to the appointed date and time. Thus, when the appointed date and time has been reached, the alarm sound is output to inform the user that the appointed date and time has been reached, and simultaneously the appointed image information corresponding to the appointed date and time is displayed on the displayer.

[0013] Accordingly, in order to recognize an event, it will do if the user only selects predetermined image information from among a plurality of pieces of image information displayed on the displayer, so that it is unnecessary to perform a troublesome letter registration task, and it is thus possible to reduce the user's burden of performing such a tedious task. Also, when an appointed date and time

has been reached, the user can recognize that the appointed date and time has been reached through the alarm sound, and can rapidly identify an event by viewing image information displayed on the displayer.

[0014] In addition, according to the present invention, when a message preset corresponding to the appointed date and time is stored in addition to the appointed image information in the second memory means, the schedule display control means selectively displays a combination of the appointed image information and the message, the appointed illustration alone, and the message alone. Herein, when appointed image information and a message are simultaneously displayed, the user can identify the detailed contents of a schedule. However, for example, when the displayer has a small display screen, it becomes difficult for the user to identify displayed contents if many letters and drawings are displayed in the small screen. For this reason, when the mobile terminal is configured in such a manner that image information and a message are selectively displayed according to the selection of the user, the user can identify an event through a display screen which is easy to view.

[0015]

EMBODIMENT OF THE INVENTION

Hereinafter, an exemplary embodiment of the present

invention will be described in more detail with reference to the accompanying drawings.

[0016] FIG. 1 is a block diagram illustrating the configuration of a mobile terminal according to the present invention.

[0017] The mobile terminal includes a liquid crystal display (LCD) 11, a display driver 12, a CPU 13, a key input unit 14, a timer 15, a ROM 16, an illustration memory 17, a memory 18 (hereinafter, referred to as a "presentation memory 18") for presentation, and a wireless controller 19. Herein, among the components, the display driver 12, key input unit 14, timer 15, ROM 16, illustration memory 17, presentation memory 18 and wireless controller 19 are individually connected to the CPU 13. Also, the display driver 12 is connected to the LCD 11, and the wireless controller 19 is connected to an antenna 191 and a speaker 192.

[0018] The wireless controller 19 receives a wireless carrier signal, which is introduced from a base station (not shown), through the antenna 191, down-converts the received signal into a reception intermediate-frequency signal through an internal receiving system (not shown), demodulates the converted signal to obtain a baseband signal, and then amplifies and outputs the baseband signal through the speaker 192. Also, when the introduced

wireless carrier signal includes data, such as a text message, the wireless controller 19 provides the data information to the CPU 13. When the data received to the CPU 13 corresponds to control data, the CPU 13 analyzes the control data and performs a required control operation. In contrast, when the data received to the CPU 13 corresponds to information data, the CPU 13 stores the information data in the presentation memory 18. Thereafter, the data stored in the presentation memory 18 is provided by the CPU 13 to the display driver 12 so as to be displayed on the LCD 11.

[0019] Meanwhile, a voice signal of the user, input to a microphone (not shown), is subjected to a modulation processing by a transmitting system (not shown), is up-converted into a wireless carrier frequency, is amplified to a predetermined transmission power level, and then is transmitted through the antenna 19 to the base station.

[0020] The CPU 13 includes, for example, a micro computer, as a main controller, and contains an alarm output means 131, an illustration selection instruction means 132 and a schedule display control means 133, in addition to a wireless access control function, a communication control function, a data communication control function, etc. Also, the ROM 16 has stored control programs and control data to be used by the CPU 13. Also, the timer 15 measures the current date and time.

[0021] The alarm output means 131 controls the wireless controller 19 to output an alarm sound through the speaker 192 at a set date and time. Also, when the timer 15 is set by the key input unit 14, the set date and time is stored in the presentation memory 18.

[0022] When the timer circuit 15 is set so as to output an alarm sound at a date and time appointed by a user's operation by means of the key input unit 14, the illustration selection instruction means 132 displays a plurality of illustrations stored in the illustration memory 17, and instructs the user to select one illustration from the displayed illustrations. Herein, when one illustration is selected and appointed, the appointed illustration is stored in the presentation memory 18 corresponding to the date and time set in the timer 15. Also, as shown in FIG. 2, the illustration memory 17 has stored a plurality of illustrations, which differ depending on events, in advance.

[0023] The schedule display control means 133 compares the appointed date and time data stored in the presentation memory 18 with the current date and time measured by the timer 15. When the appoint and current dates and times are in accord as a result of the comparison, the schedule display control means 133 informs the user by outputting an alarm sound, and simultaneously reads an appointed

illustration corresponding to the corresponding date and time from the presentation memory 18 and displays the read illustration on the LCD 11.

[0024] Also, the key input unit 14 includes dial keys, a send key, various function keys, a scroll key, etc.

[0025] Hereinafter, the operation for a schedule display setting in the mobile terminal having the aforementioned construction will be described. FIG. 3 is a flowchart illustrating the operation of the CPU 13 for executing such a procedure.

[0026] That is, when the mobile terminal enters an alarm setting mode by the setting operation of the user using the key input unit 14 (step 101), the CPU 13 outputs appointment time setting instructions to the user (step 102). Then, when an appointment time is set by the key input unit 14, the CPU 13 displays a plurality of illustrations stored in the illustration memory 17 on the LCD 11 and instructs the user to select one illustration from among the displayed illustrations (step 103). Next, when an illustration is selected and appointed through the key input unit 14, the CPU 13 stores the appointed illustration in the presentation memory 18 corresponding to the appointed time set in advance (step 104). Thereafter, the mobile terminal enters a waiting state until the appointed time (step 105).

[0027] Hereinafter, a schedule display operation performed at the appointed time according to aforementioned construction will be described. FIG. 4 is a flowchart illustrating the operation of the CPU 13 for executing such a procedure.

[0028] That is, when the timer 15 reaches the appointed time to output an alarm sound (step 201), the CPU 13 determines if the mobile terminal is powered on (step 202). Then, if the mobile terminal is powered off (YES), the CPU 13 powers it on (step 203), and if the mobile terminal is powered on (NO), the CPU 13 directly controls the wireless controller 19 to output an alarm sound through the speaker 192 so as to notify the user that the appointed date and time has been reached (step 204). At the same time, or thereafter, the CPU 13 reads an illustration corresponding to the appointed time from the presentation memory 18, and displays the read illustration on the LCD 11 (step 205).

[0029] Also, while the schedule display operation is described with respect to an appointed time as an example, the appointed time may be replaced by an appointed date and time.

[0030] According to the embodiment of the present invention, as described above, when setting the timer 15 so as to output an alarm sound at a date and time appointed through the key input unit 14, the CPU 13 displays a

plurality of illustrations, which differ depending on events and have been stored in advance in the illustration memory 17 so as to give the user instructions to select one illustration, so that the user can select and appoint an illustration from among the plurality of illustrations displayed in the LCD 11. In addition, when an illustration has been selected and appointed, the CPU 13 stores the appointed illustration as schedule information in the presentation memory 18 corresponding to an appointed date and time. Thus, at the appointed date and time, an alarm sound is output to notify the user that the appointed date and time has been reached, and simultaneously, an appointed illustration corresponding to the appointed date and time is displayed on the LCD 11.

[0031] Accordingly, in a setting operation in order to recognize an event, it will do if the user only selects an illustration, by means of a corresponding key, from among a plurality of illustrations displayed on the LCD 11. Therefore, it is unnecessary to perform a troublesome letter registration task of inputting letters by pressing dial keys and the like of the key input unit 14 one by one, and it is thus possible to reduce the user's burden of performing such a tedious task. Also, when an appointed date and time has been reached, the user can recognize, by the alarm sound, that the appointed date and time has been

reached, and can rapidly identify the event by viewing the illustration displayed in the LCD 11. In addition, schedule management also becomes easy.

[0032] Also, the present invention is not limited by the embodiment. For example, when the presentation memory 18 has stored messages, such as preset texts or the like, in addition to appointed illustrations, the schedule display control means 133 of the CPU 13 may cause a combination of an appointed illustration and a message, an appointed illustration alone, and a message alone to be selectively displayed on the LCD 11 according to the setting of the user using the key input unit 14. That is, both an appointed illustration and a message may be displayed on the LCD 11 so that the user can identify the detailed contents of a schedule. However, for example, when the LCD 11 has a small display screen, it becomes difficult for the user to identify displayed contents if many letters and drawings are displayed in the screen. For this reason, when the present invention is configured to selectively display an illustration and a message according to the selection of the user, the user can identify an event through a screen which is easy to view.

[0033] In addition, while the present invention has been described with reference to an example of outputting an alarm sound through the speaker 192 in order to inform the

user that an appointed date and time has been reached, an illustration may be displayed on the LCD 11 without outputting an alarm sound in order to inform the user that the appointed date and time has been reached if the user is in a state in which it is possible to always see information displayed on the LCD 11.

[0034] In addition, the scope of the present invention is not to be limited by the above embodiments, it will be understood that various changes may be made in the configuration of the mobile terminal, an alarm setting means, a schedule display sequence, etc. without departing from the scope of the invention.

[0035]

EFFECTS OF THE INVENTION

As described above, according to the present invention, when a timer function for outputting an alarm sound at an appointed date and time is set, a plurality of mutually different illustrations pre-stored in the mobile terminal are displayed to give the user a selection instruction. Then, when one illustration is selected and appointed, the appointed illustration is established to be stored corresponding to the appointed date and time, and then the appointed illustration corresponding to the appointed date and time is displayed at the appointed date and time.

[0035] Therefore, it is possible to provide a mobile terminal and a schedule notification method using the same, which does not request the user to perform a troublesome letter registration task and enables the user to rapidly identify events.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a circuit block diagram of a mobile terminal according to an embodiment of the present invention;

FIG. 2 is a view illustrating contents stored in the illustration memory of FIG. 1;

FIG. 3 is a flowchart illustrating the operation for a schedule display setting in the CPU shown in FIG. 1; and

FIG. 4 is a flowchart illustrating a schedule display operation performed by the CPU of FIG. 5 when an appointed time has been reached.

** Reference numerals of several elements in drawings **

11: LCD	12: display driver
13: CPU	14: key input unit
15: timer	16: ROM
17: illustration memory	18: presentation memory
19: wireless controller	131: alarm output means

132: illustration selection instruction means

133: schedule display control means

191: antenna

192: speaker